MANPRINT BULLETIN

Vol. I No. 8 "Remember the Soldier" February 1987

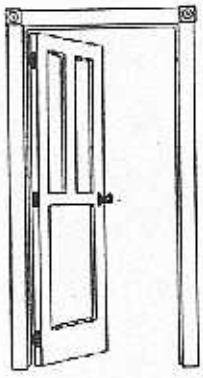
McCommons' Laws

by Bruce McCommon

While the Army has invented and is in the process of institutionalizing MANPRINT, it must be recognized that the bulk of MANPRINT activities will be done by contractors. For this reason, it will be extremely important that these contractors know precisely what is expected of them in terms of implementing MANPRINT requirements. The proper vehicle for transmitting this information is the RFP.

Contrary to a popularly held belief, most contractors do a pretty good job of honoring their commitments--as *they* understand them. When disputes regarding contract performance arise, it is often because the government failed to clearly or fully communicate its work and/or system design requirements via the RFP. Even in such cases, however, the government is not always the only culprit. While encouraged to do so, offerors have absolutely no obligation to point out weaknesses, discrepancies, or even inanities in a government solicitation. Thus, they seldom do, and the typical proposal becomes a faithful response to the letter of the requirements expressed in the statement of work and system specifications. Under such circumstances, any given contract is going to be as strong as the RFP which spawned it.

When a contract is ambiguous or remiss, misconstructions leading to disputes are bound to happen. Most of these misunderstandings could be avoided by judicious preparation of the RFP.



Inside . . .

And, while it would be desirable for contractors to share this burden, the government has to accept the ultimate responsibility. "McCommons' Laws" are really a compendium of lessons learned during approximately 18 years of administering contracted human factors engineering programs. They are directly traceable to mistakes found in RFPs which later led to program difficulties. The "laws" have been expanded and modified somewhat to accommodate the MANPRINT initiatives.

(Continued on page 2)

McCommon's Laws

1. The most important part of MANPRINT is the last three letters.

2. Being expert in one or more MANPRINT domains is not enough. To promote MANPRINT effectively, one also requires a comprehensive knowledge of the materiel acquisition process and at least a rudimentary knowledge of the associated procurement regulations and contracting procedures.

3. Materiel acquisition is a process, not a series of discrete events that can be addressed or revisted at will. As such, it requires careful planning, continuity of effort, and an audit trail.

4. Know what the contractor and/or program manager know. Knowing more is even better.

5. Become familiar with the pertinent specs, standards, and regulations, and use them to your advantage.

6. Don't ever take "no" for an answer the first time you hear it.

7. Don't ever take "yes" for an answer, regardless of when you hear it. Always follow up to assure that promised actions really happened.

8. The two most important activities in materiel acquisition are the preparation of the RFP and the source selection. Treat them accordingly.

9. A contract is an RFP with the "shalls" changed to "wills."

10. An ECP is something that got left out of the RFP.

11. There is no efficient way to recover from a poorly constructed RFP.

12. Do your homework--there's no such thing as effective "boilerplate."

13. Keep it simple--forget the motherhood.

14. Eschew ambiguity unless you can make it work to your advantage (such opportunities will be extremely rare).

15. He who introduces ambiguity gets to live with it later.

16. When preparing RFP inputs, be clear, accurate, and concise, and provide rationale for all input. Most probably, you won't be around to protect or explain them when it really counts.

17. In general, citing whole documents (e.g., specs and standards) is neither allowed nor appropriate--tailor everything.

18. Keep data to the minimum required to accomplish intended purposes.

19. Adding requirements to a DID is not allowed. You might get away with it. You probably won't.

20. A DID without an accompanying work effort (SOW) is nothing more than paper.

21. Citing a document as "applicable" in section 2 of a specification without later referencing it in either section 3 or 4 is useless.

22. Don't put work statements in the specs.

23. Don't put requirements statements in the SOW.

24. A requirements statement without an accompanying quality assurance (QA) provision is useless.

25. Formal design reviews (PDRs and CDRs) are not for designing things. They are for making decisions.

26. Contractors only do work they get paid for, i.e., that which is defined in the SOW.

27. There is no way to guarantee a successful MANPRINT program. The best that can be done is to maximize the probability of success by specifying appropriate work, data, and design requirements and then doing your level best to ensure that they are met.

28. Your most important assets are knowledge, determination, a believing and supportive program manager, and an effective contractor counterpart. Luck helps, but don't count on it.

Source: Bruce McCommons, U.S. Army Human Engineering Laboratory, AV: 298-5175 or COM (301) 278-5175.

BOOK REVIEW

Taking Stock of Human Productivity Research

by Kent Myers, Ph.D.

Joseph Zeidner, ed. *Human Productivity Enhancement* (Volume 1). New York, NY: Praeger Publishers, 1986, 477 pp.

This two-volume collection of essays consolidates recent theories and research findings from military-oriented laboratories. The first volume deals with training and human factors, while the second (to be issued soon) deals with organizational effectiveness, knowledge representation and decisionmaking, and personnel selection and utilization.

In the first section on training, Jesse Orlansky measures the productivity and cost-effectiveness of flight simulators, computer-based instruction, and maintenance training simulators. All are justified, within certain limits, but more study is needed to set guidelines for the optimum mix of these approaches with their alternatives. Robert Seidel and Greg Kearsley review the use of computers as learning tools. They find that both instructional theory and the craft of teaching are poorly matched to the new interactive media. Henry Taylor and Alan Stokes present a history of flight simulators and discuss the choice between whole- and part-task training. They find that the value of recent fidelity enhancements and computerized features is not firmly established. Overall, however, "Results indicate that about one-half hour of flight time is saved for each hour in the simulator and that procedural skills can be trained more effectively in the simulator in fewer trials than in the aircraft." John Modrick reviews the difficult and neglected topic of training for team performance. Robert Smillie and Robert Blanchard analyze job performance aids (JPAs). The authors warn against using JPAs in isolation and show that they can only be effective when designed and introduced to fit the whole personnel and training system. George Lawrence writes on attempts to increase performance through biofeedback training. Researchers have failed to control general stress responses, but they have some success where specific physiological functions interfere with specific tasks. For example, marksmen can improve performance by controlling breath and heart rate.

In the section on human factors, Stanley Halpin and Gary McCollough review theory on user-computer interaction, culminating in a concept of "conversation" and associated design guidelines. William Rouse discusses supervisory control and points out the lack of conceptual clarity in current ad hoc designs. Azad Madni and Amos Freedy review robotics and propose several concepts to be used in an "intelligent interface" which manages the joint performance of operator and robot. Peter Weddle traces the development of techniques such as HARDMAN that are used to document the human resource requirements of technologies. He indicates where the techniques fall short of producing information that will influence design engineers.

Michael Samet and Ruven Brooks review software programming practices. Sandra Hart explores pitfalls in workload research and presents the pros and cons of five different approaches to workload assessment.

This collection will continue to be valuable as a reference work because of its broad coverage, up-to-date sources, and high-quality presentation. MANPRINT practitioners will find the volumes effective for refreshing or expanding their knowledge of these topics. ●

Brooke's Law

Whenever a system becomes completely defined, some damn fooldiscovers something which either abolishes the system or expands it beyond recognition.

MANPRINT Vignettes

As more and more people are practicing MANPRINT in preparing system requirements and in monitoring system development efforts, stories are beginning to accumulate from some of their experiences. Many of these stories are not grand enough to be turned into formal "lessons learned," but are important enough to be shared in some forum other than casual conversation.

This month we are launching a new column, "MANPRINT Vignettes," to meet this need. But we need input from our readers to make this column a success. Please share your experiences with other MANPRINT Bulletin readers. Send your "vignettes" to The Editor, MANPRINT Bulletin, c/o Automation Research Systems, Ltd., 4401 Ford Avenue, Suite 400, Alexandria, VA 222302.

"We Will Meet the Spec"

by John Miles

The importance of having MANPRINT effectively written into system development contracts was brought home to me in a recent meeting of the government ILS management team at the contractor's plant.

Several officers from TRADOC explained the kinds of MANPRINT-type problems found in predecessor systems and urged the contractor to devote some effort to seeing that those problems did not recur. The contractor's senior manager present at the meeting responded to each of the officers by saying, "Don't worry, we will meet the spec."

The problem with "meeting the spec" is that nobody asked whether "the spec" (or the scope of work) addressed those kinds of issues, required the contractor to address them in the work breakdown structure, and promised to pay him for doing so.

Contributed by John Miles, U.S. Army Research Institute, AV: 284-8917 or COM (202) 274-8917. ●

Hotlines

MANPRINT

The MANPRINT Information Hotline is operational from 9:00 a.m. to 4:00 p.m. Eastern Time, Monday through Friday. The phone numbers are: outside Virginia, (800) 262-1626; inside Virginia, (800) 327-1626. The hotline is operated by Automation Research Systems, Ltd. (ARS), under contract to the Office of the Deputy Chief of Staff for Personnel. Depending on the nature of your question, ARS will either provide an immediate answer, research the answer and call you back, or refer you to the appropriate agency or person for a response. ●

Human Factors Engineering Standardization

The U.S. Army Human Engineering Laboratory (HEL) hotline provides information on HFE speci-fications, standards, handbooks, and data item descriptions to make it easier to include MANPRINT requirements in RFPs and planning documents. The hotline also provides information on appropriate provisions, proper citation, current issues of documents, sources of provisions, ordering information, and plans for future HFE standardization. The hotline operates from 9:00 a.m. to 5:00 p.m. Eastern Time, Monday through Friday, and can be reached by calling (205) 876-2048 or Autovon: 746-2048. ●

Input / Output

Letter to the Editor

Dear Sir:

While I am genuinely appreciative of the value of your publication, I am concerned that your recent edition contains some misinformation which will not help the MANPRINT community achieve its goals.

I'm referring to the review by Kent Myers of Jonathan Kaplan's report titled *A Concept for Developing Human Performance Specifications*, published by HEL in 1980. First, Myers is clearly entitled to his own opinions--however erroneous. But somebody on your editorial board ought to be reviewing purported technical copy a little more carefully.

While there are some weaknesses in the Kaplan and Crooks report, Myers didn't really find them. What he attacks instead are the theoretical foundations of MANPRINT, most important among them the notion that humans are part of a "system." It is not a form of evil to view soldiers as part of a system and to measure their time and accuracy in performing the tasks which make the system function. That's been the approach of human factors since the work of Frederick Taylor at the Midvale Steel Company in 1898. Hence, your reviewers comment that *Concepts* "is not well grounded in theory" is absurd.

Another factor that makes this review so astonishing is that it appears on the page right after an excellent article by Durham, Cherry, and Hodges on MANPRINT lessons learned, one of which is that "MANPRINT must maintain an engineering focus. . . ." That's precisely what *Concepts* gives us, and it deserves better treatment that the lukewarm endorsement that your reviewer finally gave it.

John Miles

Reply from the Editorial Board:

We appreciate hearing from Mr. Miles. His letter provides the occasion to state some of our editorial policies.

We only review materials that we feel are useful to the MANPRINT community. The item under discussion is certain a useful guide to writing performance specifications, and the review states this. Other issues that were raised, while important in themselves, are secondary to our purpose in running the review. Both Mr. Miles and Mr. Myers are indeed entitled to their own opinions.

MANPRINT is a big field. It can be home for many different viewpoints and will countenance many questions. As we see it, our job in publishing the bulletin is to promote ways of looking at the problem and providing a platform for others to share their solutions and lessons learned. ●

TRADOC Establishes Address-Indicating Group for MANPRINT

The commander of the Training and Doctrine Command (TRADOC) has announced that TRADOC headquarters has established an address-indicating group (AIG) for MANPRINT points of contact (POC). All MANPRINT update messages will be sent using AIG 7443. This will reduce the length of update messages by two pages. The AIG can also be used by any addressee to exchange MANPRINT information between POCs. Addressees are not authorized to use HQ TRADOC MANPRINT update message numbers, i.e., 87-1, 87-2, etc.

HQ TRADOC plans to send a series of update messages, beginning with 87-2, to review published guidance, policy, and so forth. If you have topics or questions of general interest that you would like to have addressed in a future update message, please sent it to or call Suzie Swafford, ATCD-SP, Autovon: 680-4225. ●

Schedule of MANPRINT Courses for FY 87

MANPRINT Staff Officer Courses

Date	Location
2 Mar 87 - 20 Mar 87	Ft. Belvoir, VA
30 Mar 87 - 17 Apr 87	Ft. Belvoir, VA
4 May 87 - 22 May 87	Leesburg, VA
15 Jun 87 - 2 Jul 87	Ft. Belvoir, VA
27 Jul 87 - 14 Aug 87	Ft. Belvoir, VA
14 Sep 87 - 2 Oct 87	Ft. Belvoir, VA

One Week MANPRINT Courses

Date	Location
27 Apr - 1 May 87	Ft. Belvoir, VA
1 - 5 Jun 87	Ft. Harrison, IN*
13 - 17 Jul 87	Ft. Belvoir, VA
17 - 21 Aug 87	TBA*
31 Aug - 4 Sept 87	Ft. Belvoir, VA

* Please note change

GO/SES MANPRINT Seminars

All located in Washington, DC

Dates	
26 Mar 87	23 Jun 87
23 Apr 87	22 Jul 87
21 May 87	20 Aug 87

Information on course allocations can be obtained from HQDA (DAPE-ZAM), Washington, DC 20310-0300. Telephone: AV 225-9213 or COM (202) 695-9213.

Meetings of Interest in 1987

4 - 5 March
SDI Technical Achievements Symposium. Washington, DC.*

8 - 9 April
Guns and Ammunition Meeting. Monterey, CA.*

5 - 7 May
International Personnel and Training Factors Conference. Luxembourg City, Belgium.**

11 - 13 May
Manpower, Personnel, and Training in Systems Acquisition Conference. San Antonio, TX. Contact Air Force Human Resources Lab, Attn: AFHRL/MOD (LTCol. Short), Brooks AFB, TX 78235-5601. Telephone: (512) 536-3942 or Autovon: 240-3942.

22 - 24 September
Automatic Test Equipment International Conference. Wiesbaden, Germany.**

12 - 14 October
Association United States Army Meeting. Washington, DC.

19 - 23 October
Human Factors Society Annual Meeting. New York City, NY. Contact: Human Factors Society, P.O. Box 1369, Santa Monica, CA 90406. Telephone: (213) 394-1611.

30 November - 2 December
9th Interservice/Industry Training Systems Conference (I/ITSC). Washington, DC.*

* Sponsored by the American Defense Preparedness Association. Contact: American Defense Preparedness Association, Rosslyn Center, Suite 900, 1700 N. Moore Street, Arlington, VA 22209-1942, Attn: TMAS. Telephone: (703) 522-1820.

** Sponsored by the National Security Industrial Association. Contact: National Security Industrial Association, 1015 15th Street, N.W., Suite 901, Washington, D.C. 20005. Telephone: (202) 393-3620.

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The MANPRINT Bulletin is an official bulletin of the Office of the Deputy Chief of Staff for Personnel (ODCSPER), Department of the Army. The Manpower and Personnel (MANPRINT) program (AR602-2) is a comprehensive management and technical initiative to enhance human performance and reliability during weapons system and equipment design, development, and production. MANPRINT encompasses the six domains of manpower, personnel, training, human factors engineering, system safety, and health hazard assessment. The focus of MANPRINT is to integrate technology, people, and force structure to meet mission objectives under all environmental conditions at the lowest possible life-cycle cost. Information contained in this bulletin covers policies, procedures, and other items of interest concerning the MANPRINT Program. Statements and opinions expressed are not necessarily those of the Department of the Army. This bulletin is published monthly under contract by Automation Research Systems, Ltd., 4401 Ford Avenue, Suite 400, Alexandria, Virginia 22302, for the Office of the Special Assistant to the Deputy Chief of Staff for Personnel (MANPRINT) under the provisions of AR 310-2 as a functional bulletin. Proposed articles, comments, or suggestions should be mailed to MANPRINT Bulletin, Attn: HQDA (DAPE-ZAM), Washington, DC 20310-0300. Telephone: Commercial (202) 695-9213 or Autovon: 225-9213.